



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2014-1052; Directorate Identifier 2014-NM-140-AD]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to supersede Airworthiness Directive (AD) 2004-13-02, which applies to certain The Boeing Company Model 747-100, -200B, and -200F series airplanes. AD 2004-13-02 currently requires initial and repetitive inspections to find discrepancies in the upper and lower skins of the fuselage lap joints, and repair if necessary. Since we issued AD 2004-13-02, an evaluation by the design approval holder (DAH) indicates that the longitudinal lap joints are subject to widespread fatigue damage (WFD), and that a structural modification at the lap joint, and post-modification repetitive inspections of the skin, existing internal doubler, or splice strap for cracks, and corrective actions if necessary, are required to reach the limit of validity (LOV). This proposed AD would add post-repair inspections for cracking and corrosion, and repair if necessary; structural modification at the lap joints; and post-modification inspections for cracking and corrosion, and repair if necessary. We are proposing this AD to detect and correct fatigue cracking in the upper and lower skins of the fuselage lap joints, which could result in sudden fracture and failure of a lap joint and rapid in-flight decompression of the airplane fuselage.

DATES: We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-1052; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6432; fax: 425-917-6590; email: Bill.Ashforth@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2014-1052; Directorate Identifier 2014-NM-140-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

Structural fatigue damage is progressive. It begins as minute cracks, and those cracks grow under the action of repeated stresses. This can happen because of normal operational conditions and design attributes, or because of isolated situations or incidents such as material defects, poor fabrication quality, or corrosion pits, dings, or scratches. Fatigue damage can occur locally, in small areas or structural design details, or globally. Global fatigue damage is general degradation of large areas of structure with similar structural details and stress levels. Multiple-site damage is global damage that occurs in a large structural element such as a single rivet line of a lap splice joining two large skin

panels. Global damage can also occur in multiple elements such as adjacent frames or stringers. Multiple-site-damage and multiple-element-damage cracks are typically too small initially to be reliably detected with normal inspection methods. Without intervention, these cracks will grow, and eventually compromise the structural integrity of the airplane, in a condition known as widespread fatigue damage (WFD). As an airplane ages, WFD will likely occur, and will certainly occur if the airplane is operated long enough without any intervention.

The FAA's WFD final rule (75 FR 69746, November 15, 2010) became effective on January 14, 2011. The WFD rule requires certain actions to prevent structural failure due to WFD throughout the operational life of certain existing transport category airplanes and all of these airplanes that will be certificated in the future. For existing and future airplanes subject to the WFD rule, the rule requires that DAHs establish a LOV of the engineering data that support the structural maintenance program. Operators affected by the WFD rule may not fly an airplane beyond its LOV, unless an extended LOV is approved.

The WFD rule (75 FR 69746, November 15, 2010) does not require identifying and developing maintenance actions if the DAHs can show that such actions are not necessary to prevent WFD before the airplane reaches the LOV. Many LOVs, however, do depend on accomplishment of future maintenance actions. As stated in the WFD rule, any maintenance actions necessary to reach the LOV will be mandated by airworthiness directives through separate rulemaking actions.

In the context of WFD, this action is necessary to enable DAHs to propose LOVs that allow operators the longest operational lives for their airplanes, and still ensure that WFD will not occur. This approach allows for an implementation strategy that provides flexibility to DAHs in determining the timing of service information development (with

FAA approval), while providing operators with certainty regarding the LOV applicable to their airplanes.

On June 9, 2004, we issued AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), for certain The Boeing Company Model 747-100, -200B, and -200F series airplanes. AD 2004-13-02 requires initial and repetitive inspections to find discrepancies in the upper and lower skins of the fuselage lap joints, and repair if necessary. AD 2004-13-02 resulted from reports of damage (corrosion and fatigue cracking) to certain lap joints on Model 737 series airplanes. These discrepancies have been attributed to the manufacturing process, which includes use of a cold-bonded adhesive in the lap joint configuration.

The subject area on certain Model 747-100, -200B, and -200F series airplanes is manufactured using a process similar to that used on the affected Model 737 series airplanes. Therefore, those Model 747-100, -200B, and -200F series airplanes may be subject to the same unsafe condition revealed on the Model 737 series airplanes. We issued AD 2004-13-02 to detect and correct discrepancies in the upper and lower skins of the fuselage lap joints, which could result in sudden fracture and failure of a lap joint and rapid in-flight decompression of the airplane fuselage.

Actions Since AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), Was Issued

Since we issued AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), an evaluation by the DAH indicates that the longitudinal lap joints are subject to WFD, and that a structural modification at the lap joint and post-modification repetitive inspections of the skin, existing internal doubler, or splice strap for cracks, and corrective actions if necessary, are required to reach the LOV.

Related Service Information

We reviewed Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. The service information describes procedures for inspections and repairs

of cracks and corrosion in the skin at lap joints in the fuselage. For information on the procedures and compliance times, see this service information at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-1052.

FAA's Determination

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Proposed AD Requirements

Although this proposed AD does not explicitly restate the requirements of AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), this proposed AD would retain all of the requirements of AD 2004-13-02. Those requirements are referenced in the service information identified previously, which, in turn, is referenced in paragraphs (g) and (h) of this proposed AD. This proposed AD would require accomplishing the actions specified in the service information described previously, except as discussed under “Differences Between the Proposed AD and the Service Information.”

The phrase “related investigative actions” might be used in this proposed AD. “Related investigative actions” are follow-on actions that: (1) are related to the primary actions, and (2) are actions that further investigate the nature of any condition found. Related investigative actions in an AD could include, for example, inspections.

In addition, the phrase “corrective actions” might be used in this proposed AD. “Corrective actions” are actions that correct or address any condition found. Corrective actions in an AD could include, for example, repairs.

Explanation of Changes to AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004)

AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), allows operators to adjust the flight-cycle threshold and repetitive interval by not counting flight cycles with a cabin pressure differential of 2.0 pounds per square inch or less. However, this proposed AD would not allow this adjustment as of the effective date of this AD. The number of flight cycles in which cabin differential pressure is at 2.0 psi or less must be counted when determining the number of flight cycles that have occurred on the airplane.

The actions specified in paragraphs (g) and (h) of this proposed AD are no longer required for Group 1 airplanes identified in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. The only Group 1 airplane, RR201, has been permanently withdrawn from service and scrapped.

Differences Between this Proposed AD and the Service Information

Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, specifies to contact the manufacturer for instructions on how to repair certain conditions, but this proposed AD would require repairing those conditions in one of the following ways:

- In accordance with a method that we approve; or
- Using data that meet the certification basis of the airplane, and that have been approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) whom we have authorized to make those findings.

Explanation of Compliance Time

The compliance time for the modification specified in this proposed AD for addressing WFD was established to ensure that discrepant structure is modified before WFD develops in airplanes. Standard inspection techniques cannot be relied on to detect WFD before it becomes a hazard to flight. We will not grant any extensions of the

compliance time to complete any AD-mandated service bulletin related to WFD without extensive new data that would substantiate and clearly warrant such an extension.

Costs of Compliance

We estimate that this proposed AD affects 2 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspections [actions retained from AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004)]	5,628 work-hours X \$85 per hour = \$478,380 per inspection cycle	\$0	\$478,380 per inspection cycle	\$956,760 per inspection cycle
Modification [new proposed action]	Up to 3,764 work-hours X \$85 per hour = \$319,940	\$0	Up to \$319,940	Up to \$639,880
Post-modification / post-repair inspections [new proposed action]	Up to 3,764 work-hours X \$85 per hour = \$319,940 per inspection cycle	\$0	Up to \$319,940 per inspection cycle	Up to \$639,880 per inspection cycle

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in this proposed AD.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), and adding the following new AD:

The Boeing Company: Docket No. FAA-2014-1052; Directorate Identifier 2014-NM-140-AD.

(a) Comments Due Date

The FAA must receive comments on this AD action by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004).

(c) Applicability

This AD applies to The Boeing Company Model 747-100, -200B, and -200F series airplanes, certificated in any category, as identified in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014.

(d) Subject

Air Transport Association (ATA) of America Code 53, Fuselage.

(e) Unsafe Condition

This AD was prompted by an evaluation by the design approval holder (DAH), which indicates that the longitudinal lap joints are subject to widespread fatigue damage (WFD). We are issuing this AD to detect and correct fatigue cracking in the upper and

lower skins of the fuselage lap joints, which could result in sudden fracture and failure of a lap joint and rapid in-flight decompression of the airplane fuselage.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Inspections for Corrosion and Corrective Actions

For airplanes identified as Groups 2 through 14 in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014: Except as provided by paragraph (l)(3) of this AD, at the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, do an external low frequency eddy current inspection for corrosion at the upper row of fasteners in the lap joint, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection at the upper row of fasteners in the lap joint thereafter at the applicable intervals specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(3) of this AD. Accomplishment of a structural modification in accordance with Part 5 of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD, terminates the inspection requirements of this paragraph in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

(h) Inspections for Cracking and Corrective Actions

For airplanes identified as Groups 2 through 14 in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014: Except as provided by paragraph (l)(3) of this AD, at the applicable time specified in paragraph 1.E., “Compliance,” of Boeing

Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, do an internal medium frequency eddy current inspection for skin cracks at the lower row of fasteners in the lap joint, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection at the lower row of fasteners in the lap joint thereafter at the applicable intervals specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(3) of this AD. Accomplishment of a structural modification in accordance with Part 5 of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD, terminates the inspection requirements of this paragraph in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

(i) Structural Modification

For airplanes identified as Groups 2 through 14 in Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014: At the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(2) of this AD, do a structural modification at the lap joints, and all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Accomplishment of the structural modification required by this paragraph terminates the inspections required by paragraphs (g), (h), and (k) of this AD in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

(j) Post-modification Inspections and Corrective Actions

For airplanes on which the actions required by paragraph (i) of this AD have been done: At the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(2) of this AD, do an internal high frequency eddy current (HFEC) inspection for cracks of the skin or existing internal doublers, and an open-hole HFEC inspection for splice strap cracks, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. If any cracking is found, before further flight, repair using a method approved in accordance with the procedures specified in paragraph (n) of this AD. Repeat the inspections of the skin, internal doublers, and splice straps thereafter at the applicable intervals specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014.

(k) Post-repair Inspections and Corrective Actions

For airplanes with any new or existing external doubler repair accomplished at a lap joint and the repair doubler length is 40 inches or longer: At the applicable time specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(2) of this AD, do an internal HFEC inspection for cracking or corrosion of the repairs, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by paragraph (l)(1) of this AD. Do all applicable corrective actions before further flight. Repeat the inspection of external doubler repairs accomplished at lap joints thereafter at the applicable intervals specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014. Accomplishment of a structural modification in accordance with Part 5 of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, except as provided by

paragraph (l)(1) of this AD, terminates the inspection requirements of this paragraph in the area of the modification only. The actions required by paragraph (j) of this AD are still applicable in the area of the modification.

(l) Exceptions

(1) If, during any action required by this AD, Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, specifies to contact Boeing for an inspection or modification procedure, or repair instructions: Before further flight, do the inspection, or modification, or repair using a method approved in accordance with the procedures specified in paragraph (n) of this AD.

(2) Where Paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2463, Revision 2, dated June 16, 2014, specifies a compliance time “after the Revision 2 date of this service bulletin,” this AD requires compliance within the specified compliance time after the effective date of this AD.

(3) For the compliance threshold and repetitive interval calculations for inspections required by paragraphs (g) and (h) of this AD, the provisions specified in paragraphs (l)(3)(i) and (l)(3)(ii) of this AD apply regarding differential pressure.

(i) For inspections done before the effective date of this AD: Flight cycles in which the cabin differential pressure was at 2.0 pounds per square inch (psi) or less need not be counted in the flight-cycle determination, provided that flight cycles with momentary spikes in cabin differential pressure above 2.0 psi were included as full pressure flight cycles. For this provision to apply, all cabin pressure records must have been maintained for each airplane. No fleet-averaging of cabin pressure is allowed.

(ii) For inspections done on or after the effective date of this AD: All flight cycles must be counted, regardless of differential pressure.

(m) Credit for Previous Actions

This paragraph provides credit for actions required by paragraphs (g) and (h) of this AD, if those actions were performed before the effective date of this AD using the service information identified in paragraph (m)(1) or (m)(2) of this AD.

(1) Boeing Alert Service Bulletin 747-53A2463, dated March 7, 2002, including Appendices A, B, and C, dated March 7, 2002, which was incorporated by reference in AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004).

(2) Boeing Alert Service Bulletin 747-53A2463, Revision 1, dated April 16, 2009, which is not incorporated by reference in this AD.

(n) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (o)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD, if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved for AD 2004-13-02, Amendment 39-13682 (69 FR 35237, June 24, 2004), are approved as AMOCs for the corresponding provisions of paragraphs (g) and (h) of this AD.

(o) Related Information

(1) For more information about this AD, contact Bill Ashforth, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6432; fax: 425-917-6590; email: Bill.Ashforth@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on January 14, 2015.

John P. Piccola, Jr.,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.

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